Werner Bleisteiner

ORPHEUS
Object-Based Audio Experience

Zukunftsmusik: Perspektiven der objekt-basierten Produktion

State-of-the-art

Es gibt sie noch, die guten Dinge…

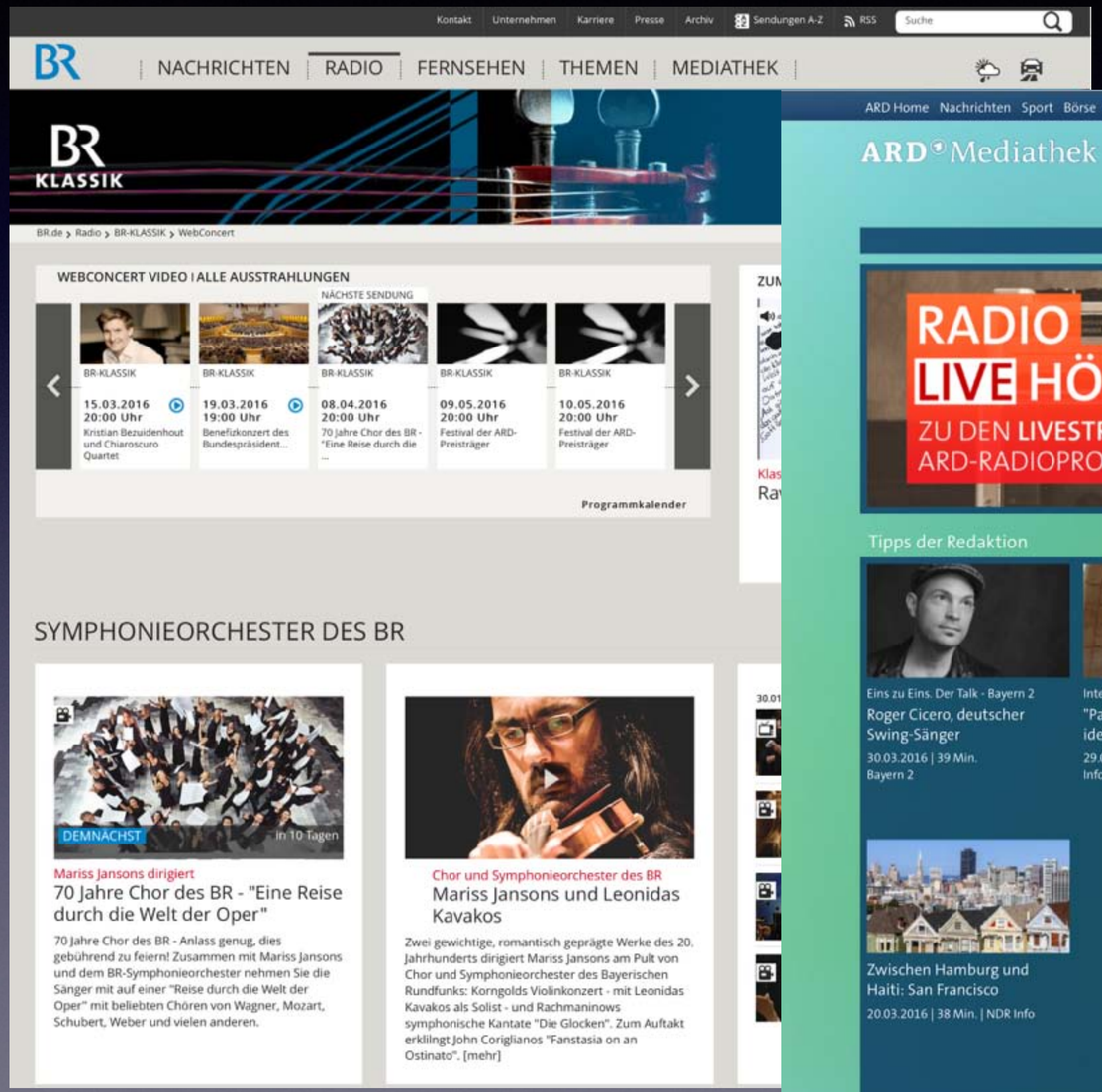
Es gibt sie noch, die guten Dinge…

was Strategen* bewegt. . .

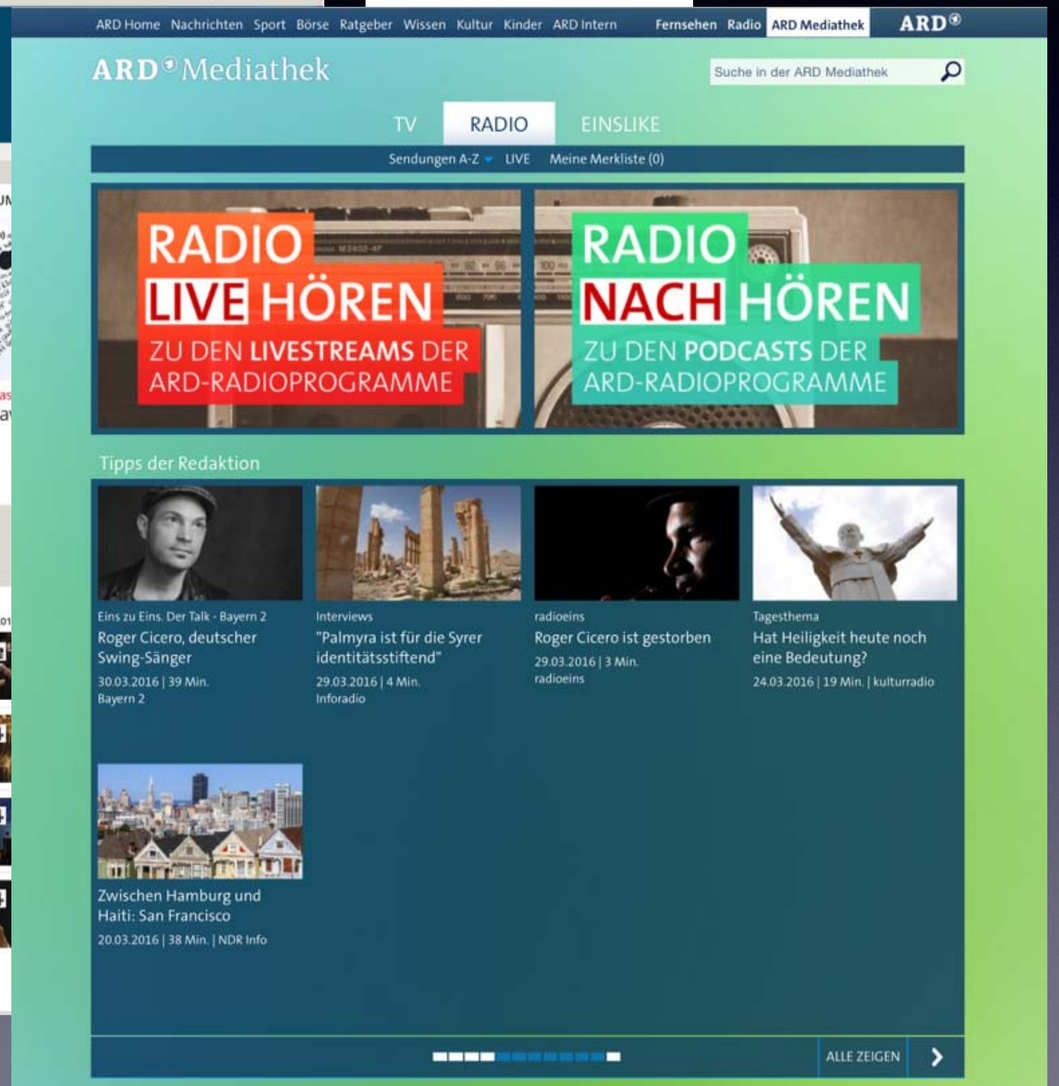
* Intendanten, Manager, Medienforscher, Analysten……

- Werden wir mit unseren Angeboten in 10 Jahren noch eine Rolle spielen?
- Wieviele Ausspielwege müssen wir bestücken?
- Welche neuen Formate müssen wir befüllen?
- Können wir mit den Medienentwicklungen Schritt halten?
- Treiben wir die Technik - oder treibt die Technik uns?
- Spielt uns das Valley an die Wand?
- Und wo bitte bleiben die kreativen Ideen?
- . . .

Nicht-lineare Nutzung



HbbTV

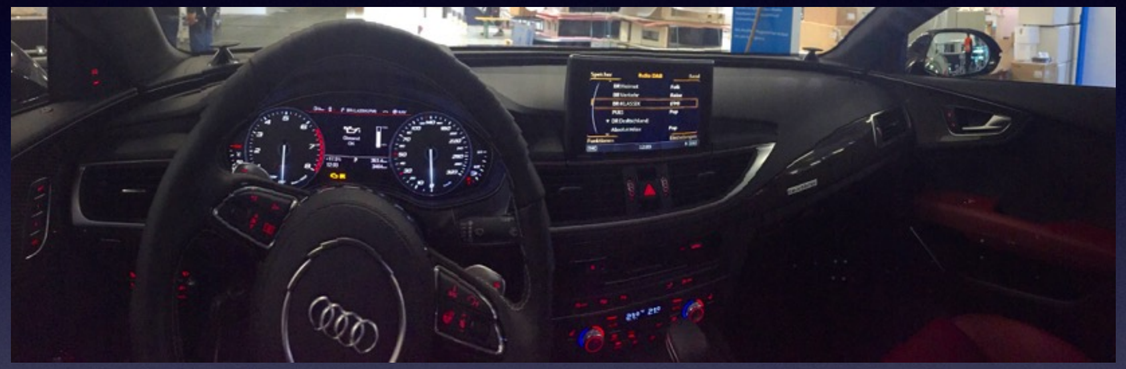


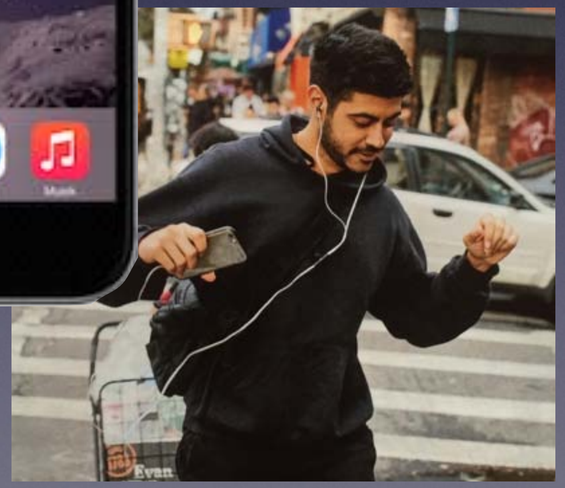
YouTube

NETFLIX

maxdome

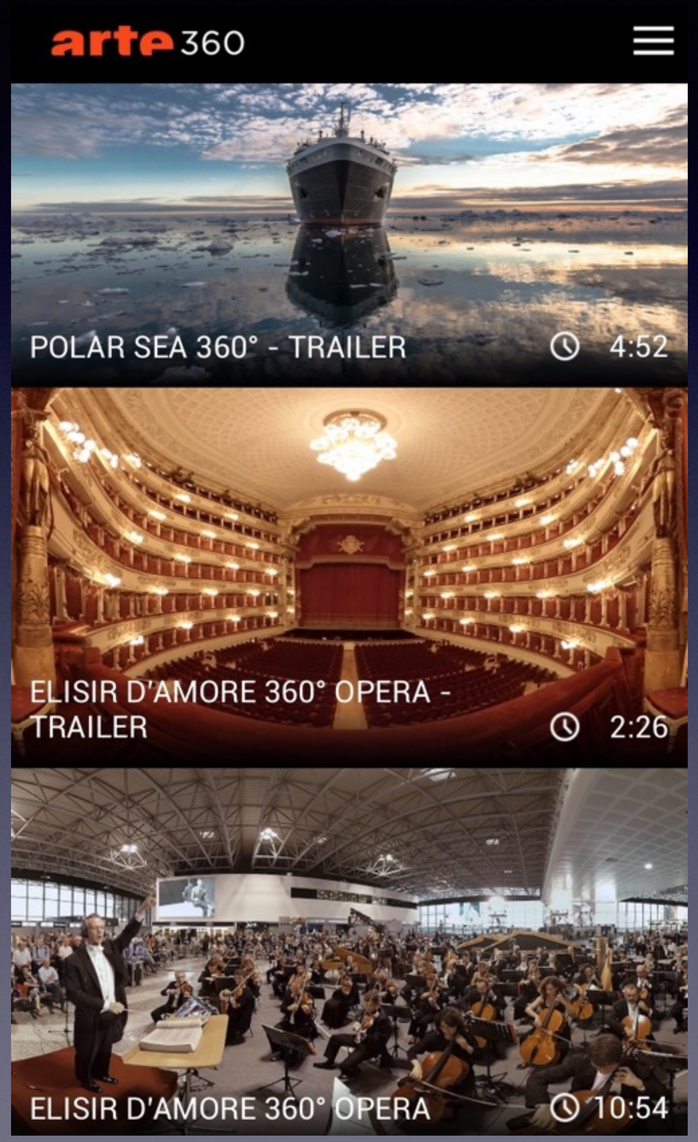
Personalisierung
Nutzungssituationen

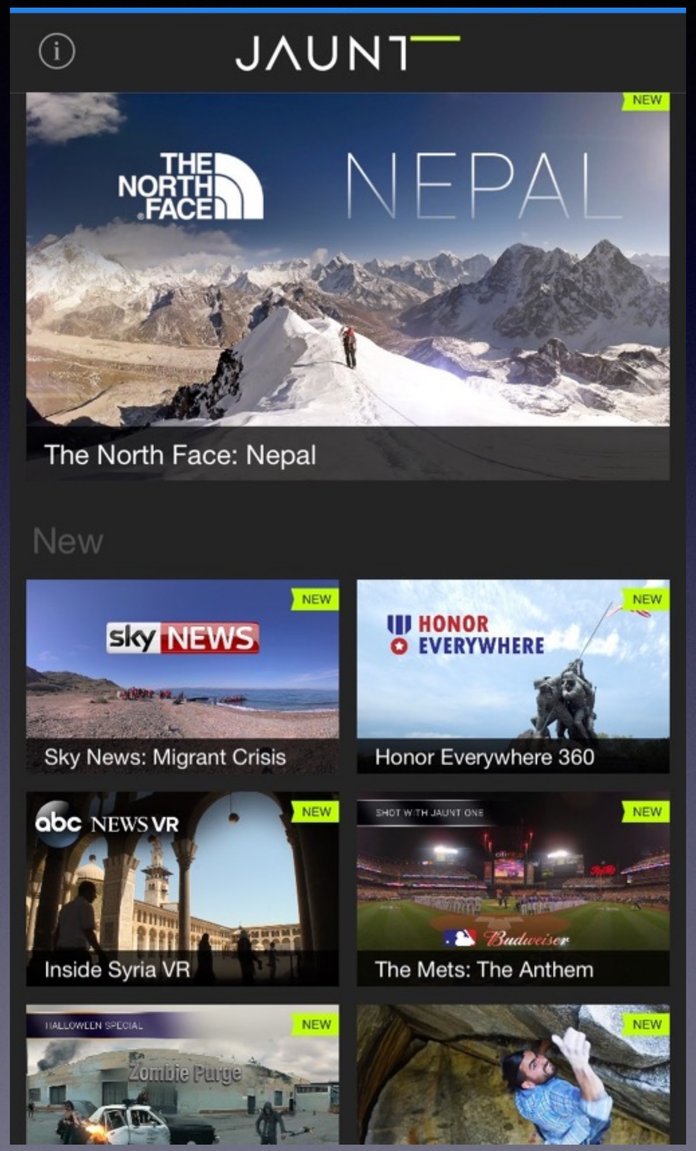


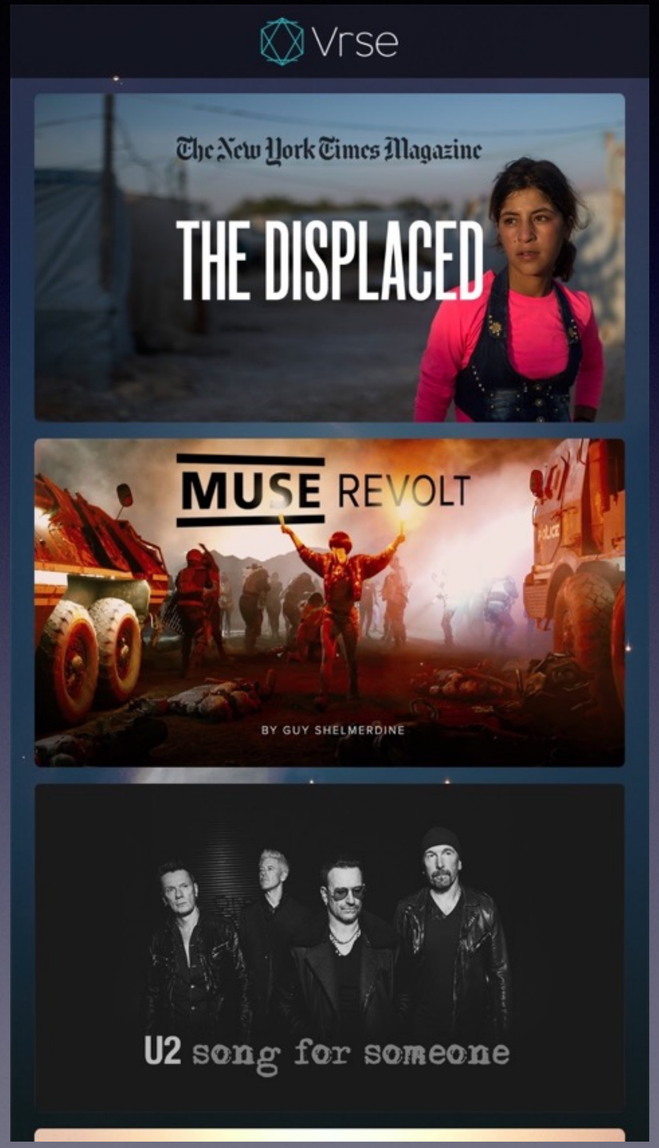


Interaktivität ?

IMMERSION: 360° Video / VR





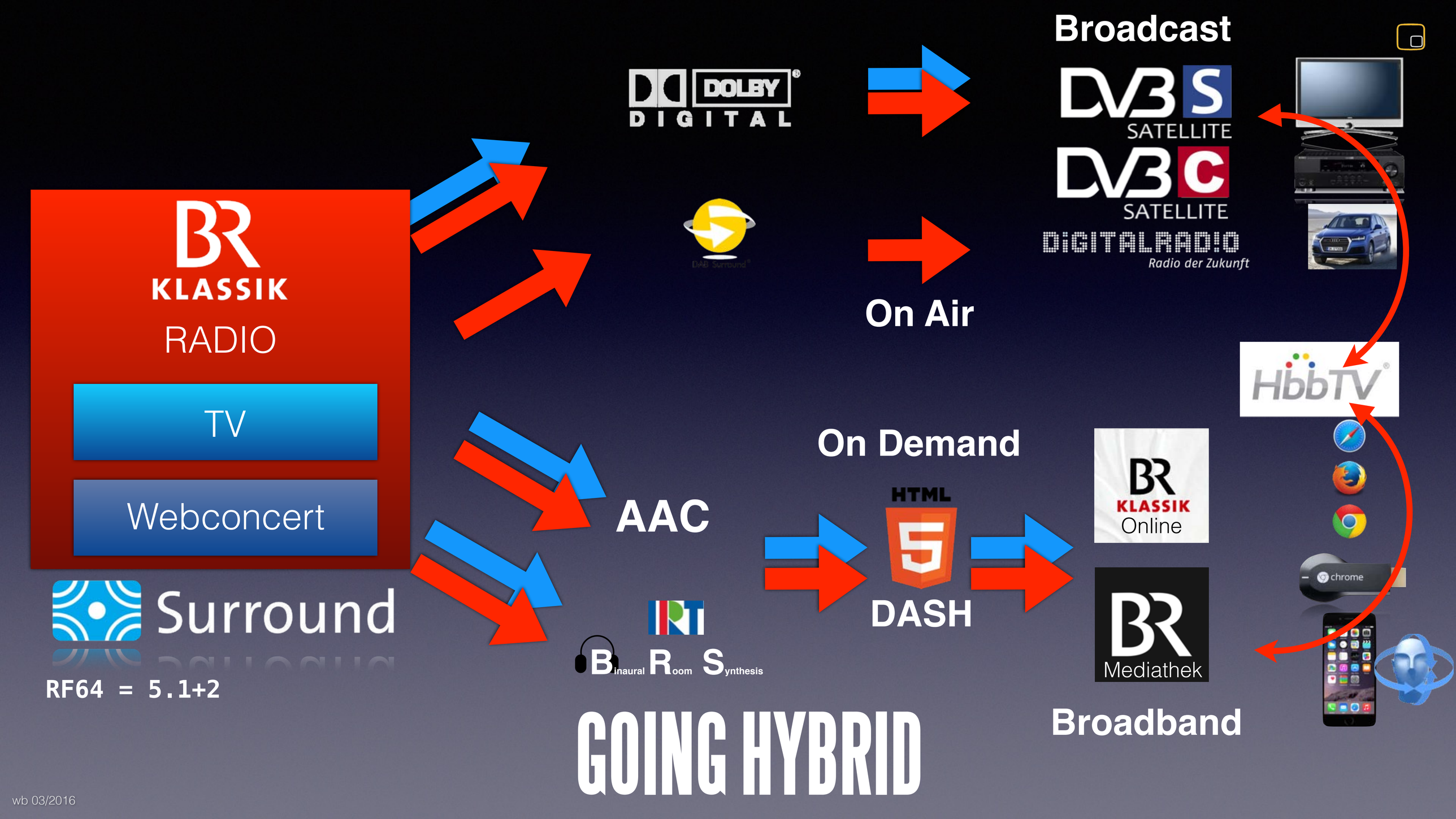


!!!

Michael Faust
@MFaustus
Geht nur mit Untertitel... #Tatort #ARD #TilSchweiger #FriedhofderNuscheltiere
Nee, so blöd sind die nicht.
Das sind deine Freunde.
03.01.16, 21:01
5 FAVORITEN

was UNS* bewegt . . .

* soundies: Tonigenieure, Tonmeister, Rundfunkleute…..


Broadcast
DOLBY DIGITAL
DVB Surround
DVB S SATELLITE
DVB C SATELLITE
DIGITALRADIO
Radio der Zukunft
On Air
BR KLASSIK
RADIO
TV
Webconcert
Surround
RF64 = 5.1+2
AAC
IRT
Binaural Room Synthesis
On Demand
HTML
DASH
HbbTV
BR KLASSIK Online
BR Mediathek
chrome
Broadband
GOING HYBRID

wb 03/2016

SOUND
SURROUND
BASED
AUDIO
IMMERSIVE
BINAURAL
OBJECT
NON LINEAR LISTENING
LOUDNESS
MPEG
BROADCASTING
HTML5
METADATA
DASH
PERSONALISATION

wb 03/2016

NON LINEAR LISTENING

PERSONALISATION

OBJECT BASED PRODUCTION

METADATA

OBJECT BASED AUDIO

...schon davon gehört?

DOLBY ATMOS

MPEG-H

dts X

Auro 3D AUDIO

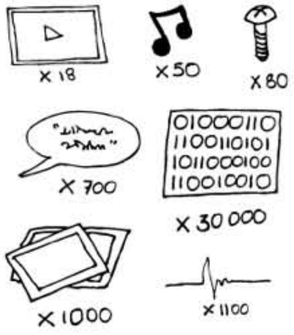
OBJECT BASED AUDIO ?

= AUDIO + METADATA

(≠ / = IMMERSIVE AUDIO)

Rundfunkproduktion bisher

1

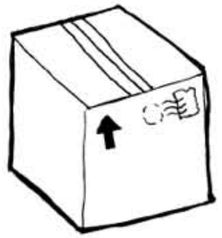


Das Programm besteht aus den üblichen Bestandteilen...

2

…und wird linear zusammengesetzt …

3



…und so für alle verpackt und verschickt.

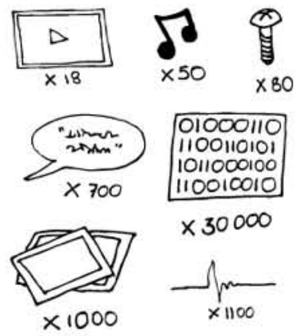
4

Diese Inhalte erscheinen nicht immer auf allen Geräten optimal.

Grafik: BBC R&D

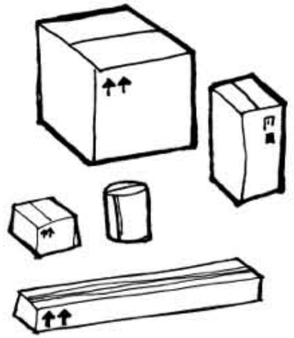
Objekt-basierte Produktion

1



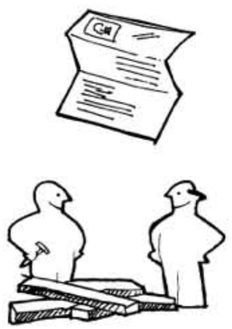
Das Programm besteht aus den gleichen Bestandteilen wie bisher…

2



…wird in eine Sammlung von Medienobjekten mit Metadaten verpackt, die beschreiben wie sie zusammengesetzt werden sollen . . .

3



und mit einer Anleitung verschickt, damit die Geräte es wieder zusammenbauen können.

4

Die Medienobjekte können so optimal wiedergegeben werden - abhängig vom Gerät, der Umgebung und den individuellen Vorlieben der Nutzer.

Grafik: BBC R&D

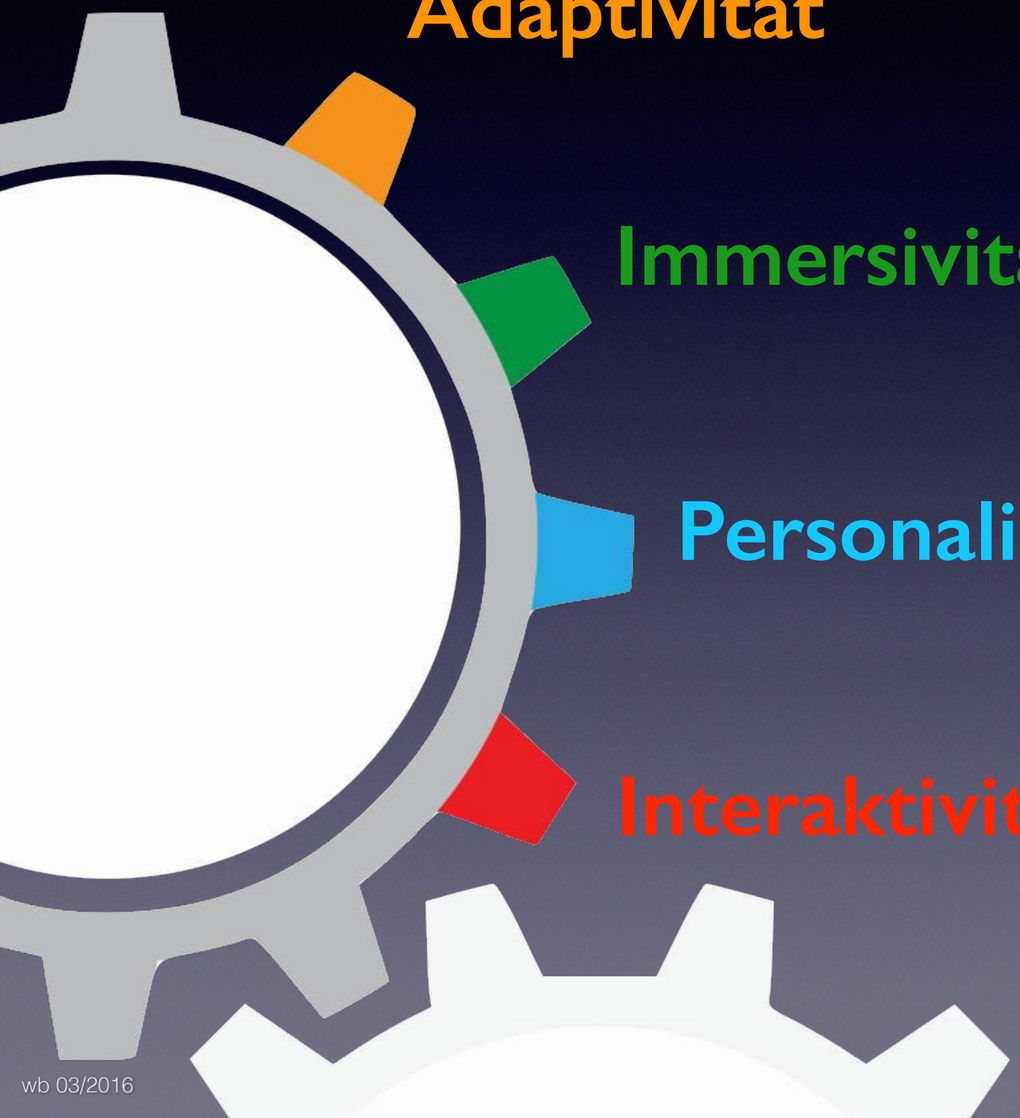
Internet of

31

IP
IMMERSION
INTERACTIVITY

wb 03/2016

objekt-basierte Produktion ermöglicht . . .



Adaptivität

Immersivität

Personalisierung

Interaktivität

Grafik: BBC R&D

Anwendungen objekt-basierter Produktion

Adaptivität

Der Reporter ist zu leise?

Die Atmo nicht laut genug?

Warum nicht selbst bestimmen, wie laut der **Kommentar** sein soll, oder in welcher **Fankurve** man virtuell sitzen möchte?

Anwendungen objekt-basierter Produktion

Adaptivität

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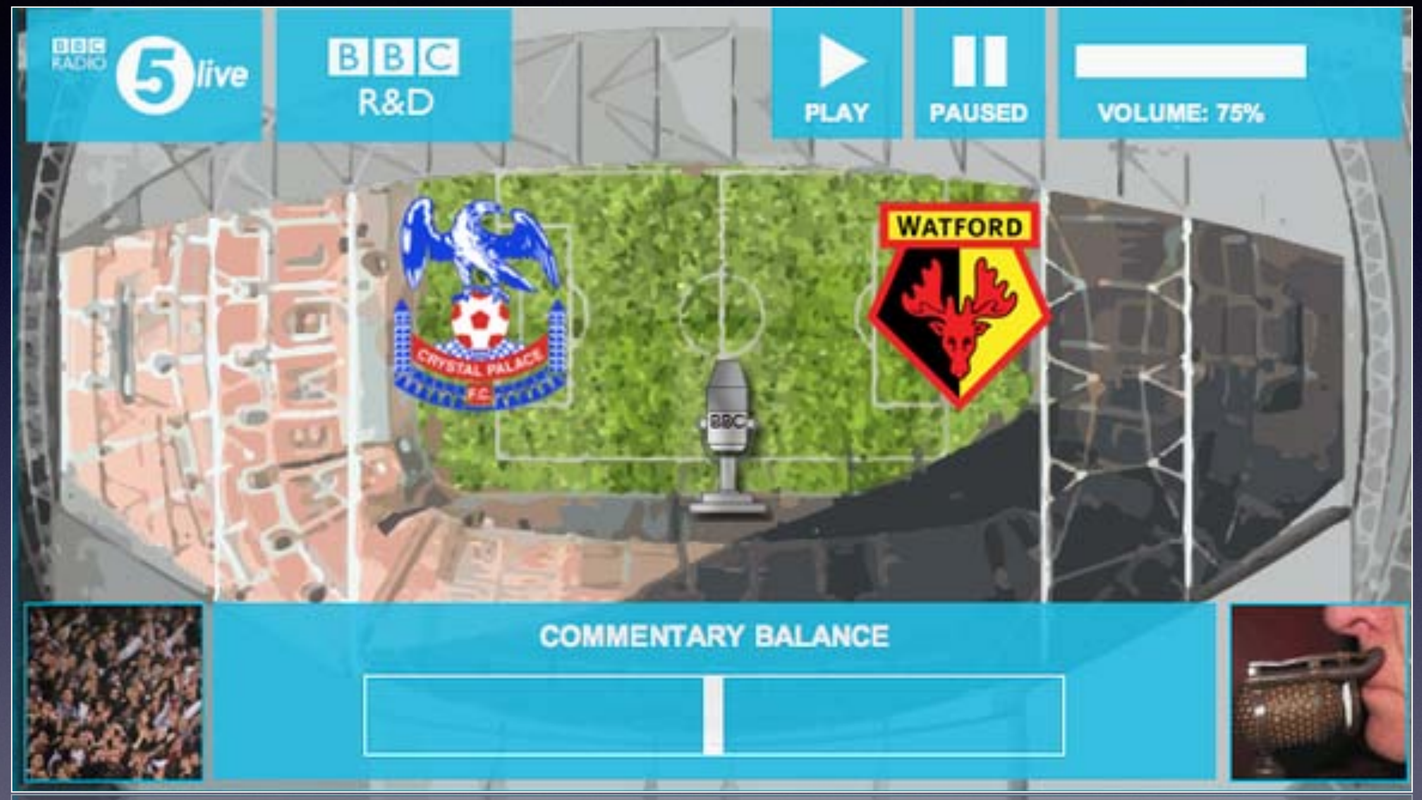

Anwendungen objekt-basierter Produktion

Immersivität

3D Sound gibt es längst im Kino und in den Games.

Und Kopfhörer haben alle.

Objekt-orientiert kann **Surround Sound** und liefert **Binaural** das direkt ins Ohr.

So wird auch **Radio** zum **3D Erlebnis.**

Anwendungen objekt-basierter Produktion

Immersivität

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Und Kopfhörer haben alle.

Objekt-orientiert kann **Surround Sound** und liefert **Binaural** das direkt ins Ohr.

So wird auch **Radio** zum **3D Erlebnis.**

Anwendungen objekt-basierter Produktion

Personalisierung

Zu wenig Zeit?

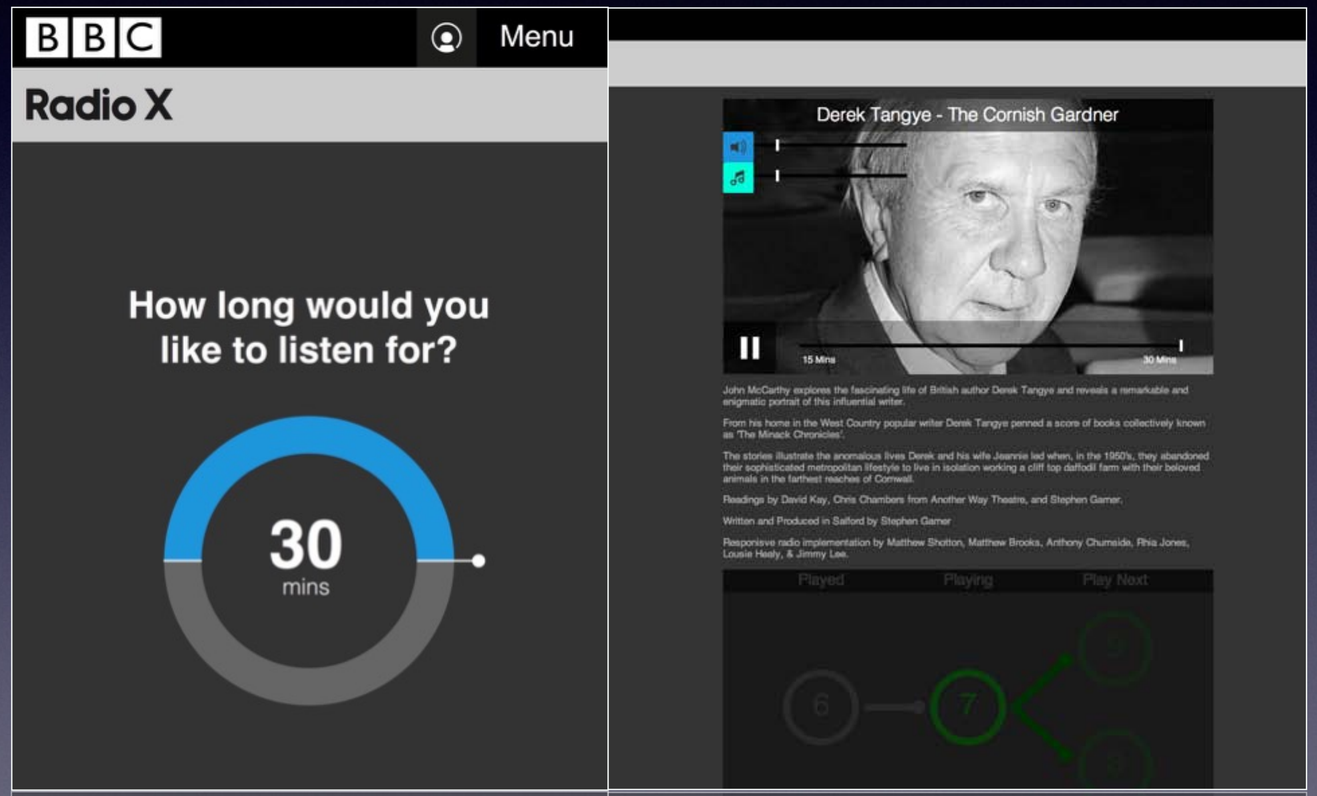
Trotzdem Bescheid wissen?

Sich nur auf das Wesentliche konzentrieren?

Objekt-orientiert macht

non-lineares Storytelling

möglich - auch im Radio.



Anwendungen objekt-basierter Produktion

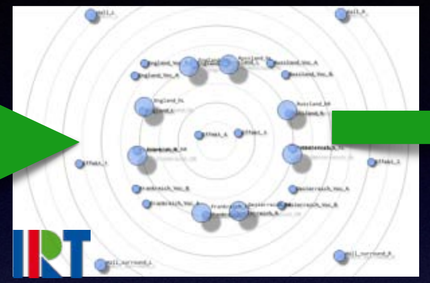
Interaktivität

Sich umsehen und selber auswählen was interessant ist.

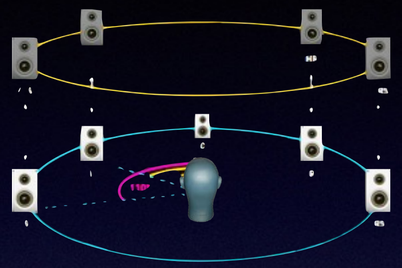
Objekt-orientierte Produktion macht **Interaktion** möglich.
Und alles weitere ist nur eine Frage der **kreativrn Ideen**.

Was aus einer Story alles werden kann

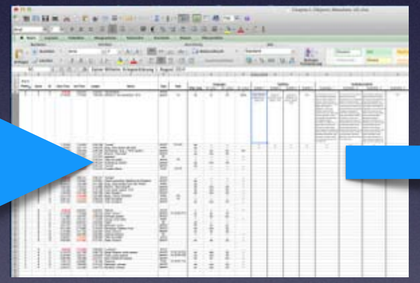
Accessible & Immersive Audio

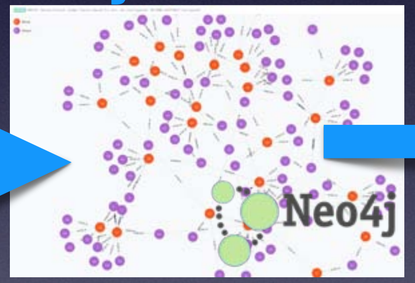


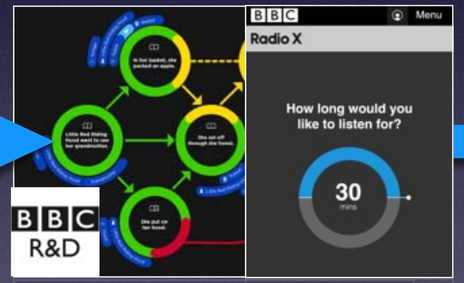
MPEG-H



Personalized Story







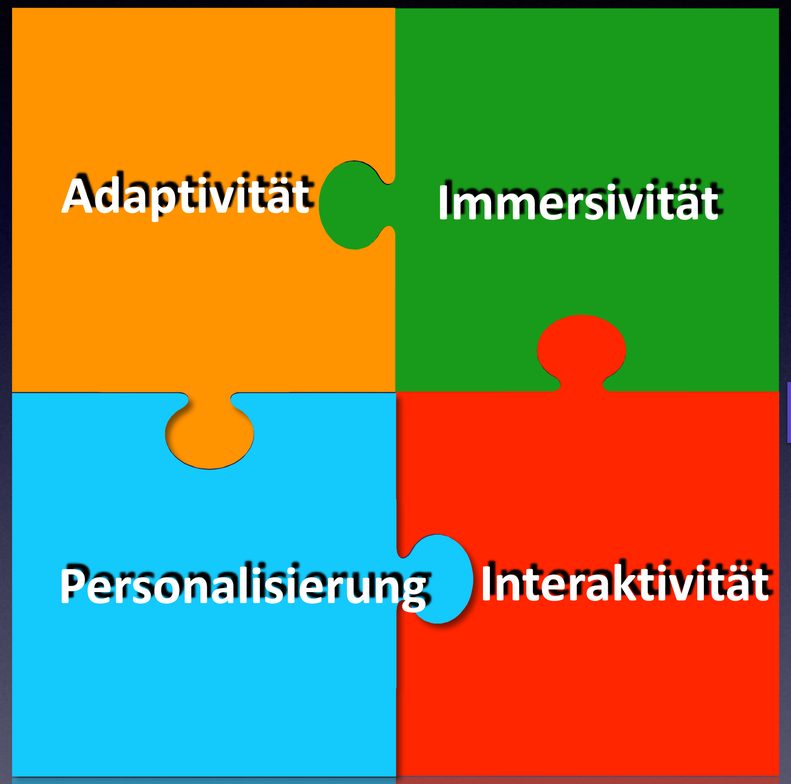
HTML

Interaktive Visuals

unity

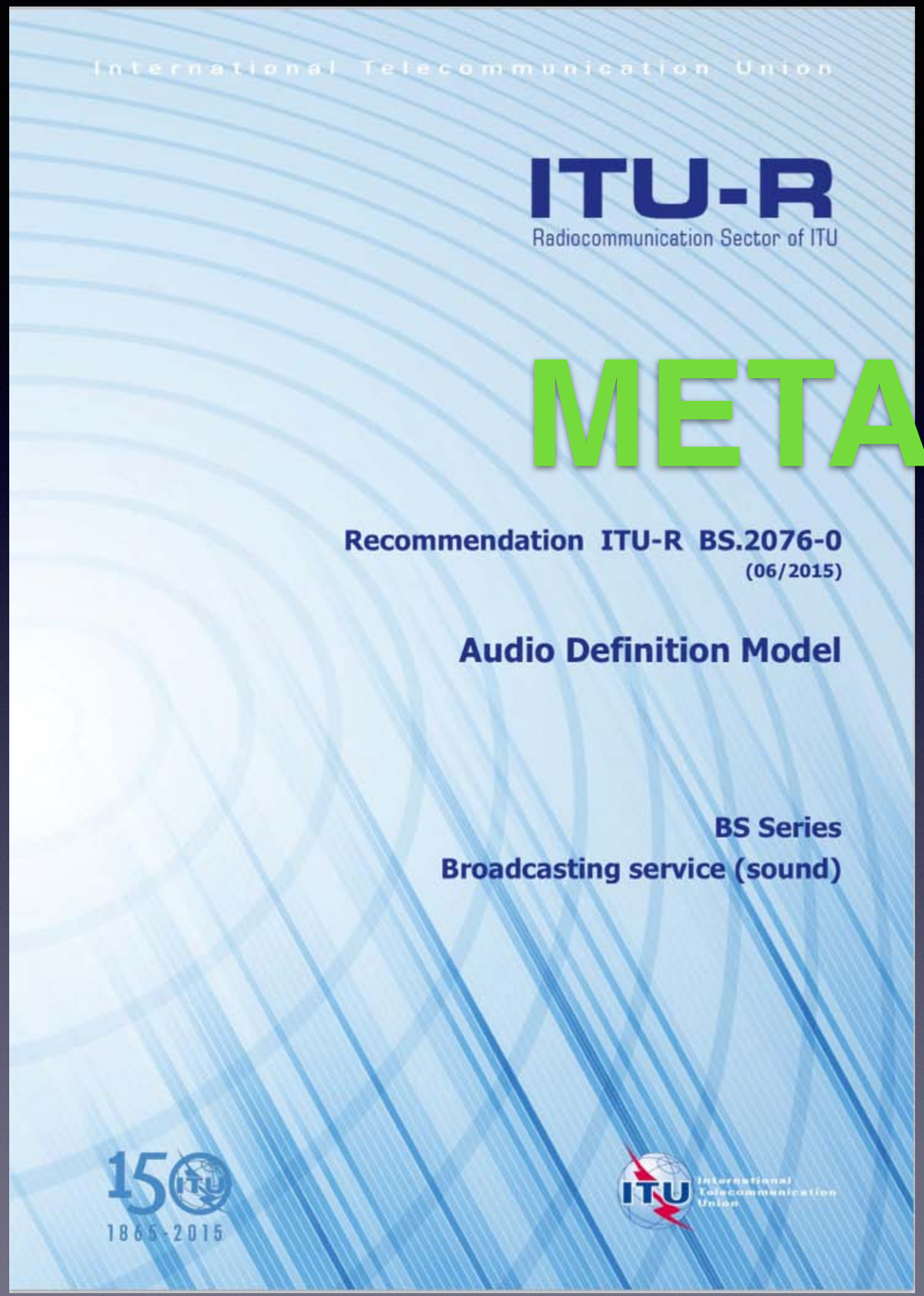
Oculus

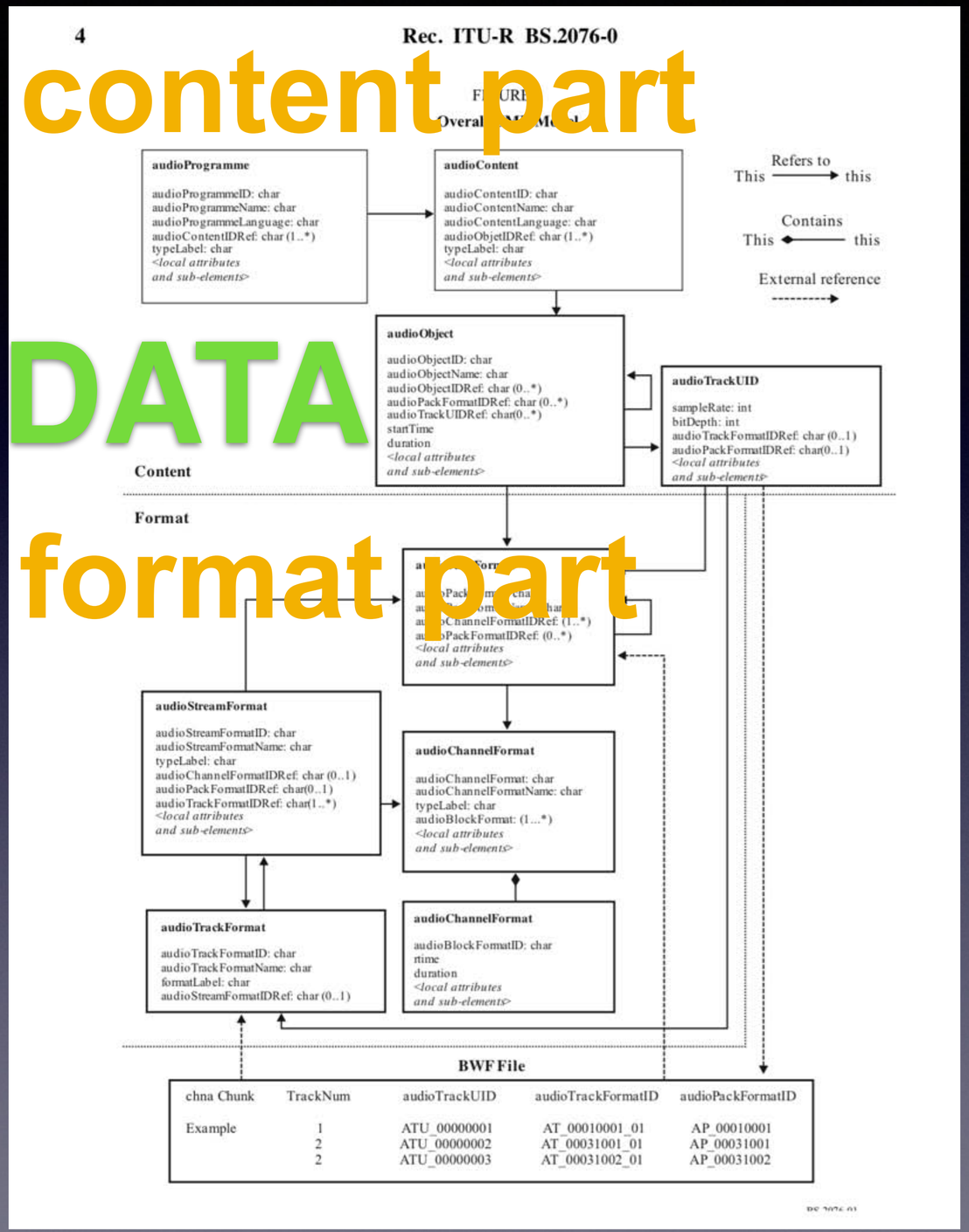
Universelles Professionelles Speicherformat



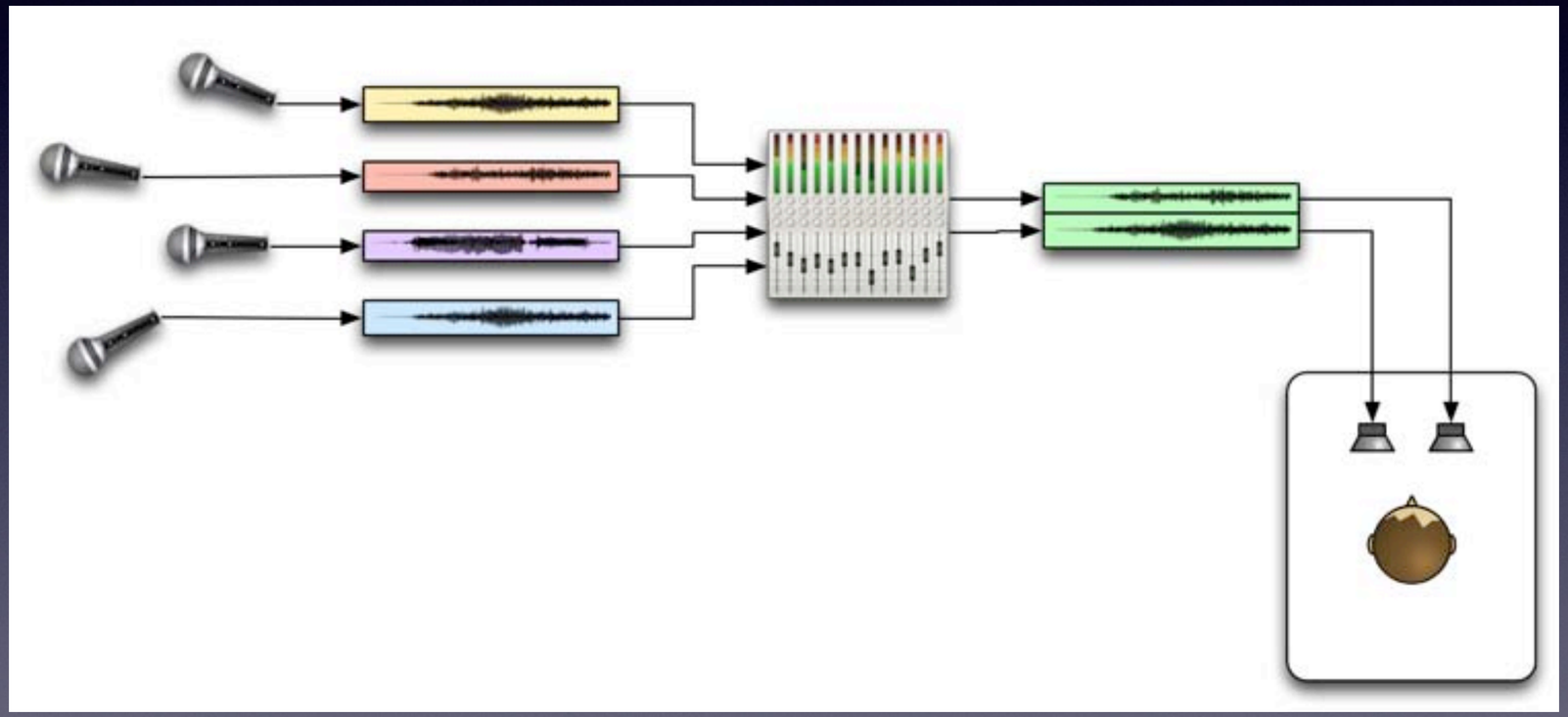
- Broadcast Standard
- crossmedial
- flexibel
- zukunftsorientiert

MPEG-H


International Telecommunication Union
ITU-R
Radiocommunication Sector of ITU
Recommendation ITU-R BS.2076-0
(06/2015)
Audio Definition Model
BS Series
Broadcasting service (sound)
150
1865-2015
ITU
International Telecommunication Union

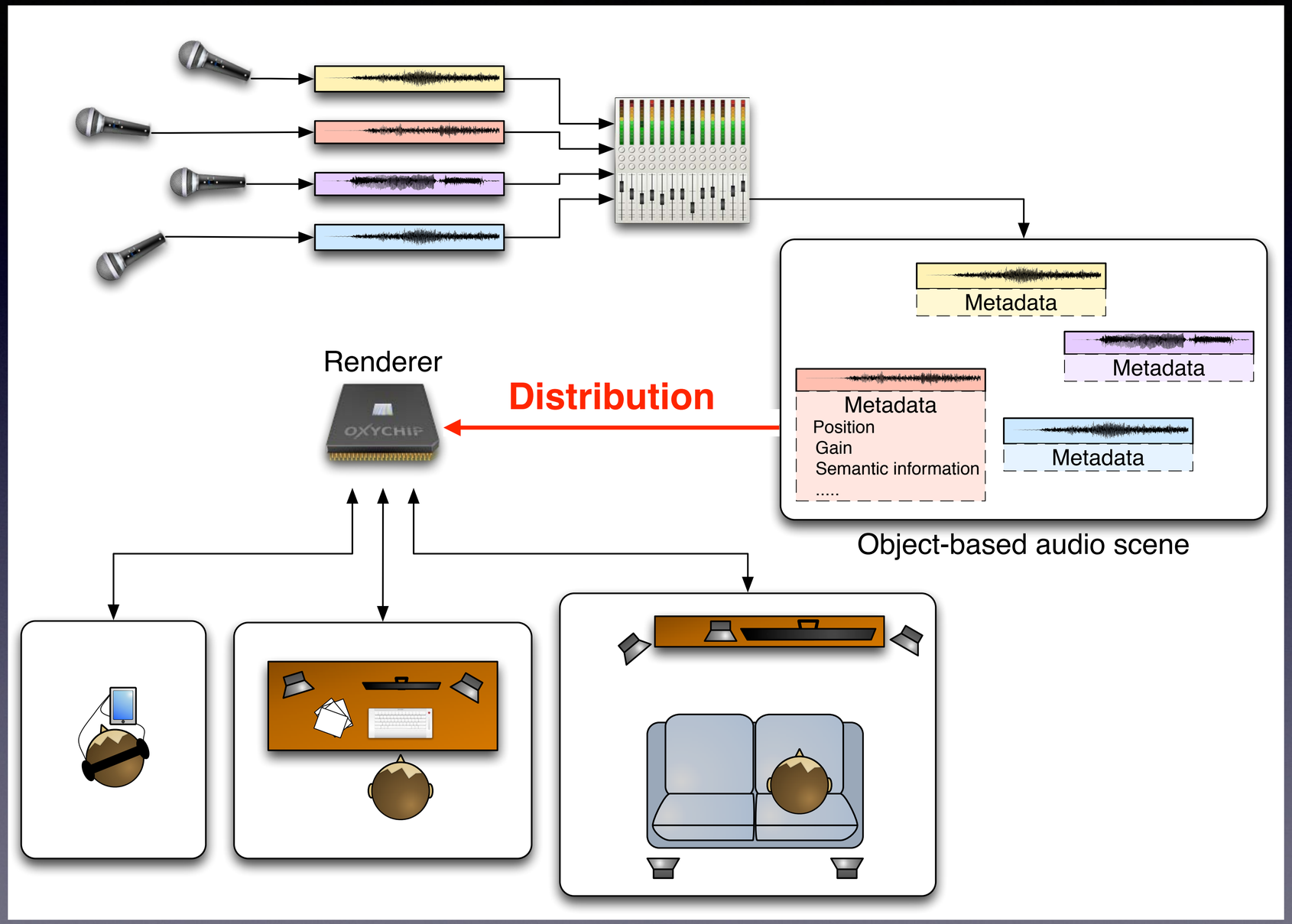

4
Rec. ITU-R BS.2076-0
content part
METADATA
format part
audioProgramme
audioProgrammeID: char
audioProgrammeName: char
audioProgrammeLanguage: char
audioContentIDRef: char (1..*)
typeLabel: char
audioContent
audioContentID: char
audioContentName: char
audioContentLanguage: char
audioObjetIDRef: char (1..*)
typeLabel: char
Refers to
This this
Contains
This this
External reference
audioObject
audioObjectID: char
audioObjectName: char
audioObjectIDRef: char (0..*)
audioPackFormatIDRef: char (0..*)
audioTrackUIDRef: char(0..*)
startTime
duration
audioTrackUID
sampleRate: int
bitDepth: int
audioTrackFormatIDRef: char (0..1)
audioPackFormatIDRef: char(0..1)
Content
Format
audioStreamFormat
audioStreamFormatID: char
audioStreamFormatName: char
typeLabel: char
audioChannelFormatIDRef: char (0..1)
audioPackFormatIDRef: char(0..1)
audioTrackFormatIDRef: char(1..*)
audioChannelFormat
audioChannelFormat: char
audioChannelFormatName: char
typeLabel: char
audioBlockFormat: (1...*)
audioTrackFormat
audioTrackFormatID: char
audioTrackFormatName: char
formatLabel: char
audioStreamFormatIDRef: char (0..1)
audioChannelFormat
audioBlockFormatID: char
rtime
duration
BWF File
chna Chunk TrackNum audioTrackUID audioTrackFormatID audioPackFormatID
Example 1 ATU_00000001 AT_00010001_01 AP_00010001
2 ATU_00000002 AT_00031001_01 AP_00031001
2 ATU_00000003 AT_00031002_01 AP_00031002

Bisher: Kanalbasierte Produktion



by Michael Meier, IRT

Künftig: objektbasierte Produktion



by Michael Meier, IRT

WebAudio API

Object-based audio

lab.irt.de/demos/taar/

Apps HTML5audio BBC Radio 3 - Stock Sign in to your Zoho

Object-based audio

HOME 360 AUDIO AND VIDEO INTERACTIVE CONTENT PERSONALIZED MIX

Object-based audio

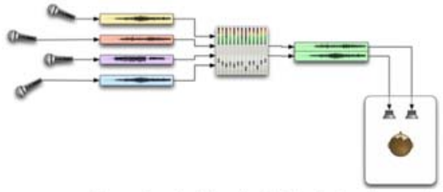
The future of audio production, delivery and consumption

Introduction

Object-based audio is a revolutionary approach for creating and deploying interactive, personalised, scalable and immersive content, by representing it as a set of individual assets together with metadata describing their relationships and associations. This allows media objects to be assembled in ground-breaking ways to create new user experiences. With the introduction of HTML5 and the Web Audio API, an important prerequisite was made for native rendering of object-based audio in modern browsers.

Channel-based audio

Although digital and file-based workflows have found their way into media production for some time now, those workflows still try, to some extent, to map the old analogue and tape-based method of production and delivery to the digital world. In an audio production, for example, various sound sources are mixed in a digital audio workstation to create a final channel-based mix for a specific target loudspeaker layout.



Conceptual overview of channel-based audio production and consumption

Each audio channel in the final product has to be reproduced by a loudspeaker at a well-defined position. This fixed audio mix is transmitted to the end-user with basically no means to adapt it to their needs, which may be a specific playback device or their personal preferences.

Object-based audio

An object-based production approach, however, is able to overcome the above-mentioned obstacles. The term 'object-based media' has become commonly used to describe the representation of media content by a set of individual assets, together with metadata describing their relationships and associations. At the point of consumption these objects can be assembled to create an overall user experience. The precise combination of objects can be flexible and responsive to user, environmental and platform specific factors.

Essentially, the goal is to capture the creative intent of the producer and carry as much information as possible, required or desired, from the production side to the end-user, to ensure the best recreation possible on the consumer side. To achieve this, the final product of a production process will be an audio scene that is in turn composed of several objects. The metadata associated with each object includes, but is not limited to, the target position of the audio signal, its target loudness and a

360 Audio and Video - Obj

lab.irt.de/demos/taar/360/

Apps HTML5audio BBC Radio 3 - Stock Sign in to your Zoho

Object-based audio

HOME 360 AUDIO AND VIDEO INTERACTIVE CONTENT PERSONALIZED MIX

360 Audio and Video

Enriching the immersive impression of VR content

Demo

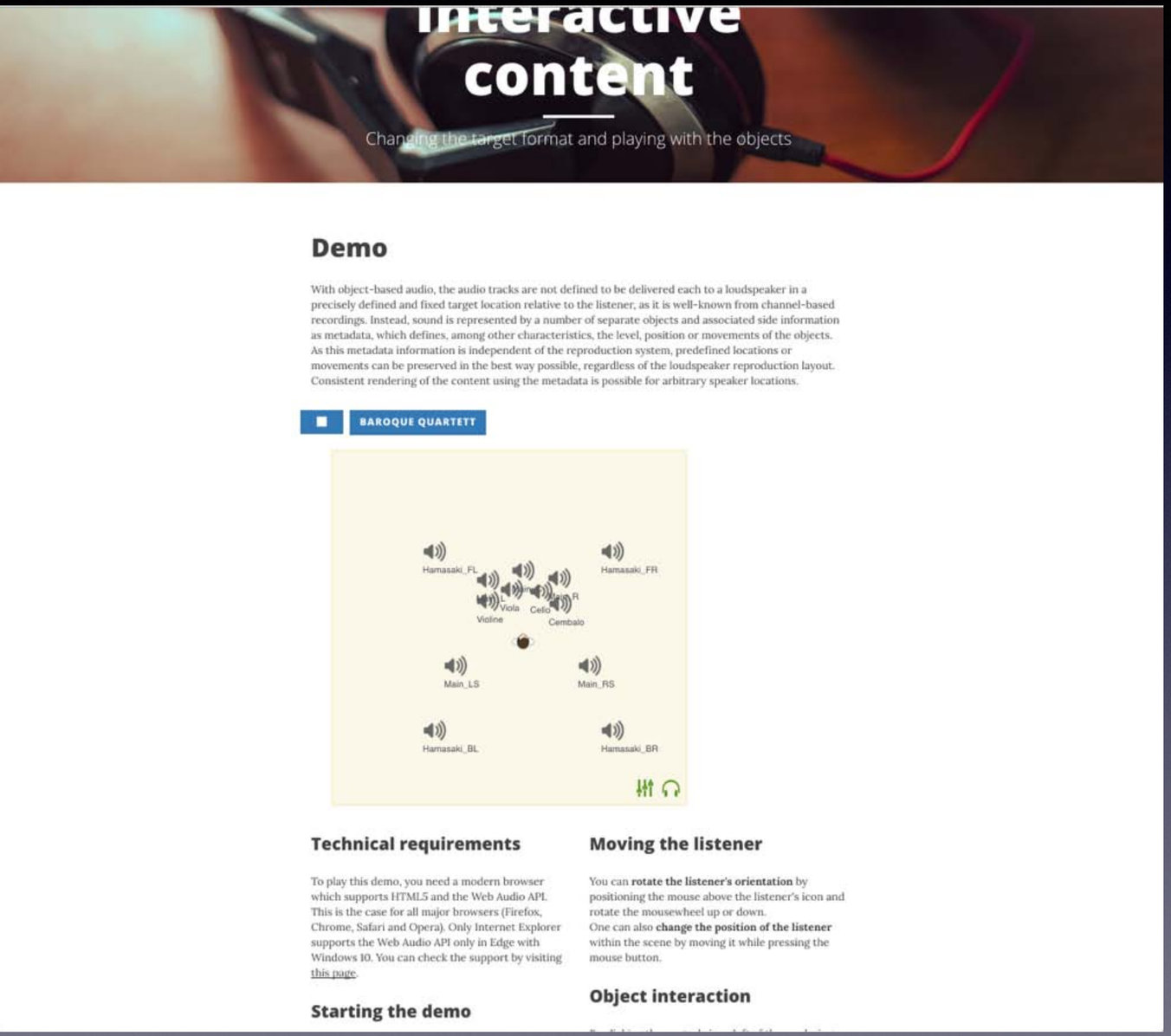
Object-based audio is also a perfect match for virtual reality applications. The immersion of such 360 or VR content can be greatly enriched by using object-based audio with headphone renderering. This demo has been produced in cooperation with the ZDF. For further information, please check this link. You can change the viewing angle with your mouse and the audio will be chanded accordingly. This demo works especially well with headphones. If you don't use headphones, you should change the rendering mode to "Stereo".

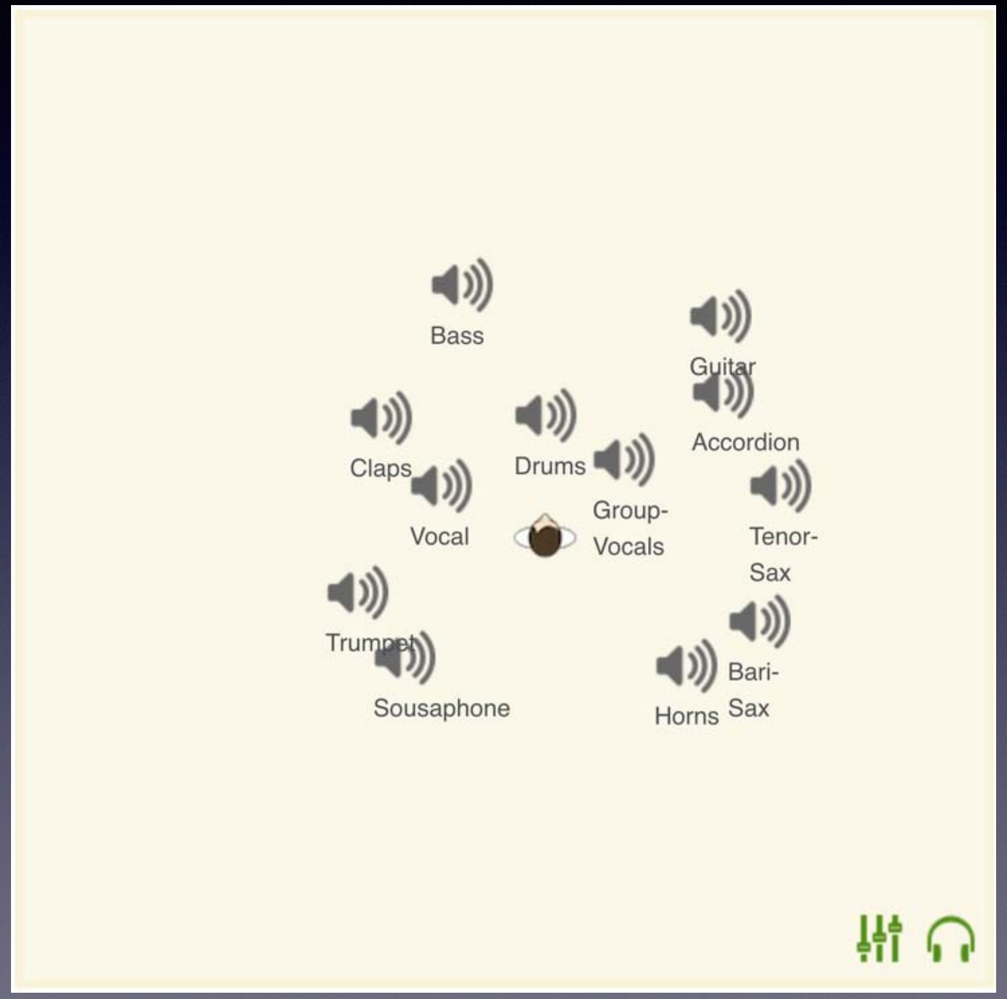
This demo has been created with the support of Faber Courtial and ZDF.

ZDF

faber courtial
studio for digital productions

WebAudio API





ORPHEUS

Object-Based Audio Experience

Object-based **B**roadcasting -
for **E**uro**p**ean Leader**s**h**i**p in next **g**eneration a**u**dio experience**s**

EURESCOM · BBC R&D · Fraunhofer IIS · IRT · BR · TRINNOV AUDIO · b<>com · ircam Centre Pompidou · elephantcandy · MAGIX

Aufgabenstellung

ORPHEUS
Object-Based Audio Experience

Kreation
- Story-Generierung & -Kuration
- Non-lineares Story-telling
- Interaktivität

Produktion
- Aufnahme
- Bearbeitung + Mischung Software (DAW)
- Qualitätskontrolle

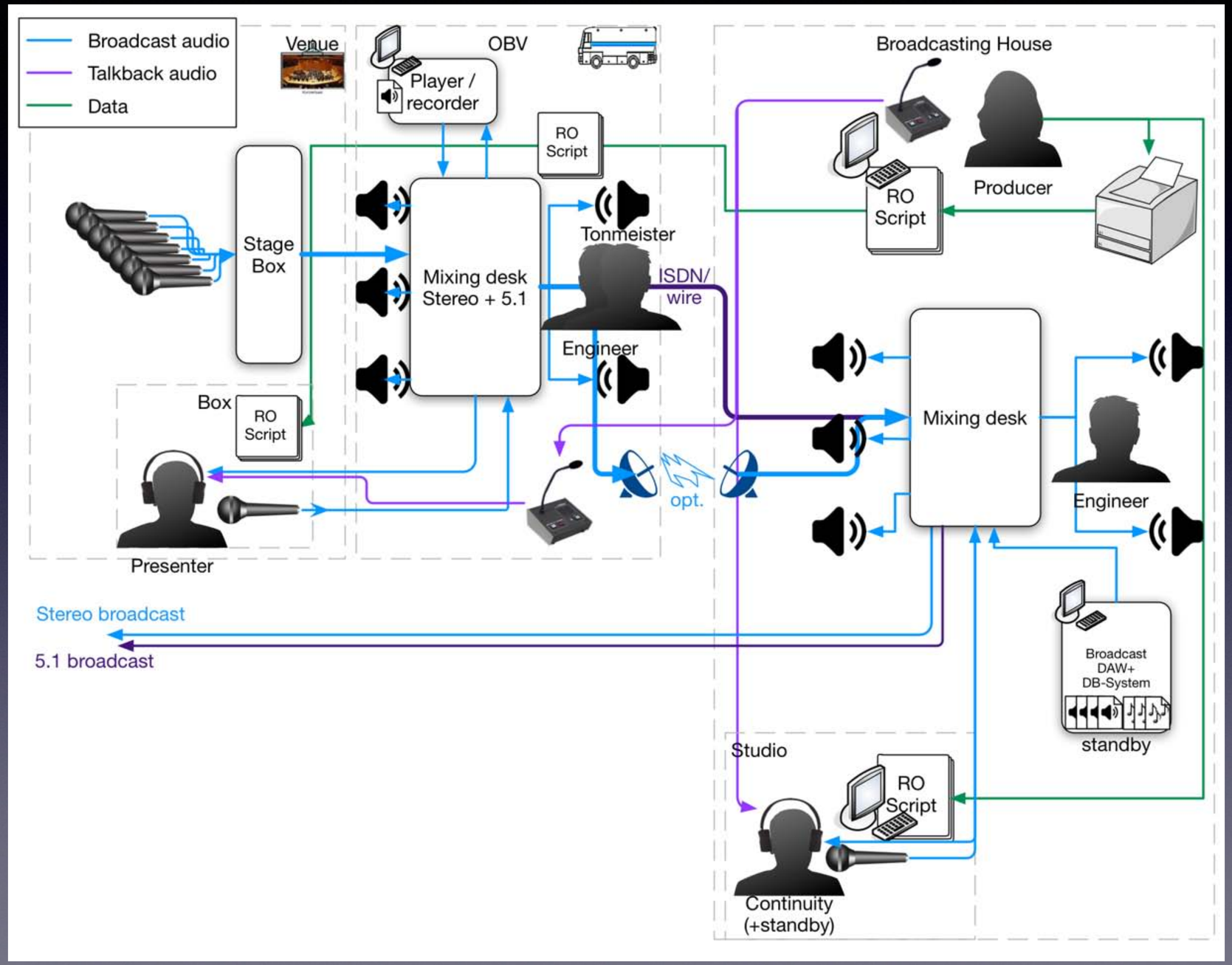
Speicherung
- Formate und interfaces
- Codecs

Verbreitung
- Bereitstellung
- Effiziente und wirtschaftliche Distribution

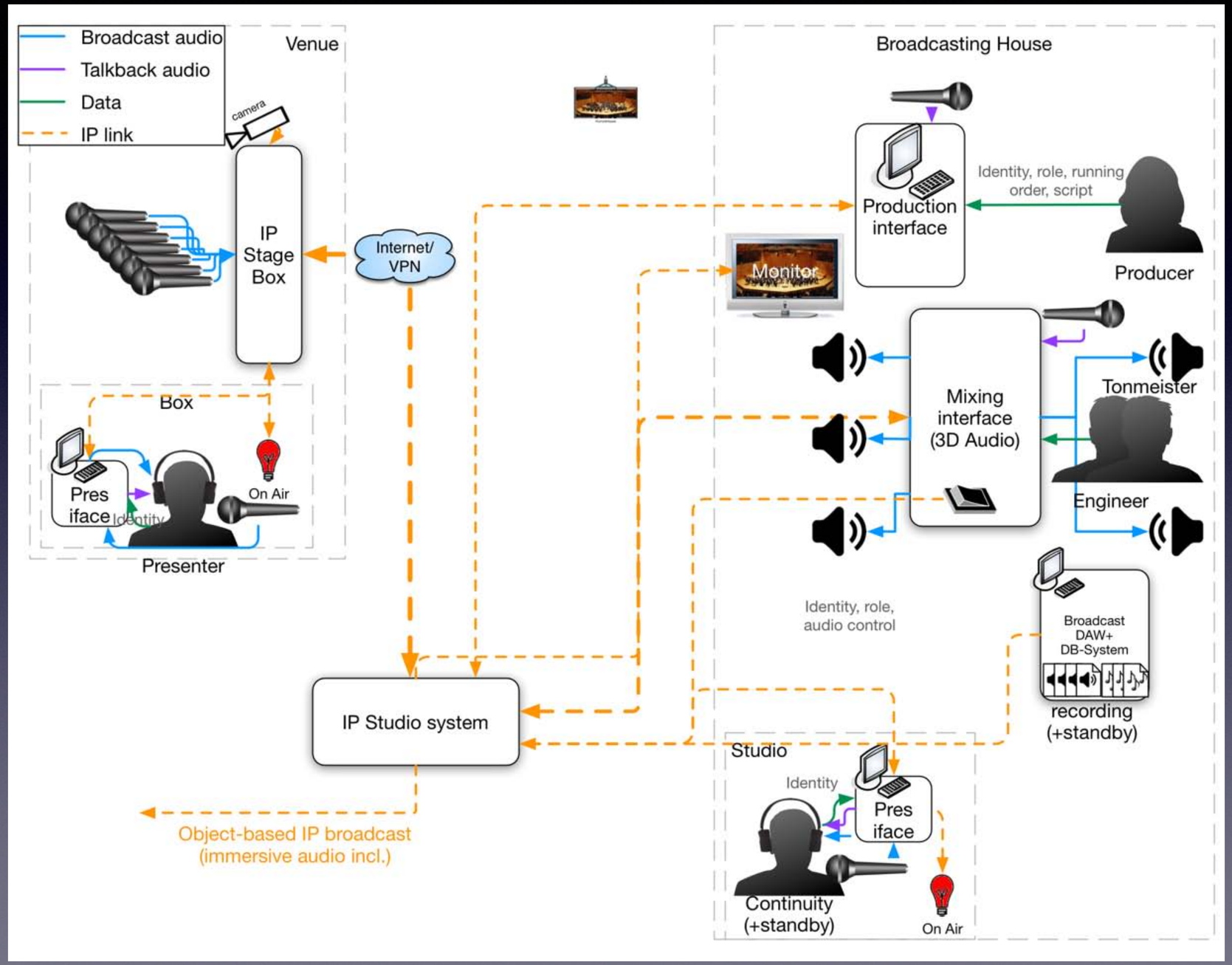
Wiedergabe
- Rendering Personalisierung Zugänglichkeit
- User Interface Interaktivität
- Qualität des Erlebniswertes

BBC R&D · b com · Fraunhofer IIS · BR · ircam Centre Pompidou · MAGIX · Institut für Rundfunktechnik IRT · EURESCOM · TRINNOV AUDIO · elephantcandy

Live Konzert - wie seit jeher



Live Konzert - IP und objekt-basierte



objekt-basierte Produktion

- konsequenter
- innovativer
- universeller

Ansatz der Medien-Produktion

essentieller Baustein
crossmedialer Produktion
- integrativ
- skalierbar
- genuin digital

prädestiniert für den Übergang

linear	<-> nicht-lineares Programm
OnAir	<-> On Demand
Broadcast	<-> Broadband

objekt-basierte Produktion

- 3D Sound

4D

- in der 4. Dimension: Zeit

More ORPHEUS

Object-Based Audio Experience

IRT THEMENTAG

tmt29

expertise in audio media

29. Tonmeistertagung

17.11. – 20.11.2016

Köln

VDT International Convention

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